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10/033,147	10/19/2001	Paul F. Langille	CRESC-011XX	7867

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EXAMINER	
AHMED, SALMAN	

ART UNIT	PAPER NUMBER
2616	

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/033,147	LANGILLE ET AL.	
	Examiner	Art Unit	
	Salman Ahmed	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *8/1/2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-14 and 16-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5,7-9,14,16,18 and 20-22* is/are rejected.

7)☒ Claim(s) *4, 6, 10-13, 17, 19 and 23-26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10/19/2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1, 3-14 and 16-26 are pending.

Claims 2 and 15 are cancelled by the applicant.

Claims 1, 3, 5, 7-9, 14, 16, 18 and 20-22 are rejected.

Claims 4, 6, 10-13, 17, 19 and 23-26 are objected

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Moir (US PAT PUB US2002/0118644).

In regards to claim 1, Moir anticipates a network device, comprising a virtual router subsystem (page 2 section 0028 and figure 1, element 10, network traffic manager, in the exemplary form of a virtual machine) including a plurality of virtual routers (figure 1, flow instances 22), each virtual router associated with a corresponding different virtual private routed network (VPRN) (page 4 section 0048, each virtual interface is created to support a specific network topology, and to specify now to map a packet to and from the external network) and employing generic interface identifiers

(page 4 section 0048, flow class) to identify associated interfaces at which routing traffic for the associated VPRN is received and transmitted (page 4 section 0048, hen the virtual machine 10 switches a packet to an egress virtual interface 26, the flow class to which the relevant packet belongs provides a transmit code point (e.g., the behavior code point discussed above), which specifies the transmission requirements of the relevant flow class); a plurality of physical interfaces coupled to physical network links connecting the network device to other network devices (page 4, section 0048, physical interface (e.g., Ethernet, VDSL, ADSL, etc.)); and a virtual interface subsystem operative to couple the virtual router subsystem to the physical interfaces (page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface), the virtual interface subsystem including a plurality of virtual interfaces, the virtual interfaces being organized into linked sets, each linked set being operative to associate a generic interface identifier of a given virtual router with a corresponding physical interface coupled to a network link connecting the network device to another network device serving the same VPRN (page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface (e.g., Ethernet, VDSL, ADSL, etc.), assign a driver instance (i.e., the realization of the physical layer), assign the label space of the physical layer that the virtual interface can use, set the type of virtual interface (e.g., Ethernet, RFC1483, PPPoverL2TP, etc.), enable disable DHCP, assign a MAC address, assign an IP address and subnet mask (when routing), enable and disable IP multicasting, enable and disable broadcasting to other virtual interfaces of a particular type, enable and disable Network Address

Translation, and enable and disable Spanning Tree and set state (e.g., blocking, listening, forwarding, etc.) priority and cost), the virtual interfaces included in the virtual interface subsystem include channel virtual interfaces (page 4 section 0048, assign a driver instance (i.e., the realization of the physical layer), assign the label space of the physical layer that the virtual interface can use, set the type of virtual interface (e.g., Ethernet, RFC1483, PPPoverL2TP, etc.)) and media virtual interfaces (page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface (e.g., Ethernet, VDSL, ADSL, etc.)), each channel virtual interface being operative to associate a generic interface identifier of the virtual router subsystem with a virtual channel defined in the network device. and each media virtual interface being operative to associate a virtual channel-with a corresponding: physical interface and physical channel defined on the associated physical network link (page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface (e.g., Ethernet, VDSL, ADSL, etc.), assign a driver instance (i.e., the realization of the physical layer), assign the label space of the physical layer that the virtual interface can use, set the type of virtual interface (e.g., Ethernet, RFC1483, PPPoverL2TP, etc.), enable disable DHCP, assign a MAC address, assign an IP address and subnet mask (when routing), enable and disable IP multicasting, enable and disable broadcasting to other virtual interfaces of a particular type, enable and disable Network Address Translation, and enable and disable Spanning Tree and set state (e.g., blocking, listening, forwarding, etc.) priority and cost) .

In regards to claim 14, Moir anticipates a method of operating a network device (page 2 section 0028 and figure 1, element 10, network traffic manager, in the exemplary form of a virtual machine) having a plurality of physical interfaces (page 4, section 0048, physical interface (e.g., Ethernet, VDSL, ADSL, etc.)) coupled to corresponding physical network links connecting the network device to other network devices (page 4, section 0048, physical interface (e.g., Ethernet, VDSL, ADSL, etc.)), comprising: operating a plurality of virtual routers (figure 1, flow instances 22), each virtual router being associated with a corresponding different virtual private routed network (VPRN) (page 4 section 0048, each virtual interface is created to support a specific network topology, and to specify now to map a packet to and from the external network) and employing generic interface identifiers to identify associated interfaces at which routing traffic for the associated VPRN is received and transmitted (page 4 section 0048, hen the virtual machine 10 switches a packet to an egress virtual interface 26, the flow class to which the relevant packet belongs provides a transmit code point (e.g., the behavior code point discussed above), which specifies the transmission requirements of the relevant flow class); maintaining a plurality of virtual interfaces (page 4 section 0048, each virtual interface), the virtual interfaces being organized into linked sets each operative to associate a generic identifier used by a given virtual router with a corresponding physical interface to another network device serving the same VPRN (page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface (e.g., Ethernet, VDSL, ADSL, etc.), assign a driver instance (i.e., the realization of the physical layer), assign the label space of the

physical layer that the virtual interface can use, set the type of virtual interface (e.g., Ethernet, RFC1483, PPPoverL2TP, etc.), enable disable DHCP, assign a MAC address, assign an IP address and subnet mask (when routing), enable and disable IP multicasting, enable and disable broadcasting to other virtual interfaces of a particular type, enable and disable Network Address Translation, and enable and disable Spanning Tree and set state (e.g., blocking, listening, forwarding, etc.) priority and cost); for routing protocol messages (page 4 section 0048, Ethernet, RFC1483, PPPoverL2TP, etc) transmitted by a given virtual router at a given interface, obtaining physical interface information (page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface) from the linked set of virtual interfaces associated with the generic interface identifier (page 4 section 0048, flow class) of the interface, the physical interface information identifying a corresponding physical interface (page 4 section 0048, underlying physical interface (e.g., Ethernet, VDSL, ADSL, etc.)) of the network device via which the routing protocol messages (page 4 section 0048, Ethernet, RFC1483, PPPoverL2TP, etc) are to be transmitted, and transmitting the routing protocol messages (page 4 section 0045, Once a forwarding decision is made in a packet, an egress virtual interface 26 will map this value into it's own pier-to-pier protocol proprietary transmission) on the network link coupled to the identified physical interface (page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface (e.g., Ethernet, VDSL, ADSL, etc.), assign a driver instance (i.e., the realization of the physical layer), assign the label space of the physical layer that the virtual interface can use, set the

type of virtual interface (e.g., Ethernet, RFC1483, PPPoverL2TP, etc.), enable disable DHCP, assign a MAC address, assign an IP address and subnet mask (when routing), enable and disable IP multicasting, enable and disable broadcasting to other virtual interfaces of a particular type, enable and disable Network Address Translation, and enable and disable Spanning Tree and set state (e.g., blocking, listening, forwarding, etc.) priority and cost).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 3 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moir (US PAT PUB 20020118644) in view of Chen et al. (US PAT 6501758), hereinafter referred to as Chen.

Moir teaches (page 4 section 0047 and figure 7) how virtual interface being a logical description of a physical interface, hides the details of any underlying multiplexing such as, an ATM physical layer and may be mapped as illustrated in FIG. 7

Moir does not explicitly teach any kind of automatic protection switching or aps scheme in his teachings.

Chen in the same field of endeavor teaches of using automatic protection switching scheme in his teachings in column 9 lines 27-31 and figure 2d. He states how ATM layers survivability for traffic carried on ATM channels can be implemented using an ATM layer protection scheme, such as virtual path 1+1 automatic protection switching (VP APS).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Moir's system/method to incorporate Chen's automatic protection switching scheme. The motivation is that (as suggested by Chen, column 9 lines 27-31 and figure 2d) automatic protection switching is necessary for implementing fault-tolerant network.

3. Claims 5, 7-9, 18 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moir (US PAT PUB 20020118644 in view of document "Cisco MPLS Controller Software Configuration Guide", Release 9.3.0 , April 2000.

Moir teaches (page 11 section 128) that separate circuits may be static channels using permanent virtual circuits or dynamic channels utilizing some combination of signaling (e.g., label distribution or call set-up).

Moir does not explicitly teach how labels specifically inner labels and outer labels are used to route calls via virtual channels.

"Cisco MPLS Controller Software Configuration Guide", Release 9.3.0, April 2000 pages 2.27-2.29, in the same field of endeavor teaches of how labels are used to route traffic through the network. It states in the section under the heading "Forwarding in a

Cisco Virtual Private Network Service" how packets arrive at the origination router from a particular customer VPN with a generic identifier ip address. Origination router looks up its VPN forwarding table, gets two different labels to put on the packet. The inner label, which has a certain value, is carried in a header encapsulated along with the rest of the IP packet. The inner label carries information specific to the virtual private network. The outer label, certain value, is an ordinary MPLS label that tells the rest of the network that the packet is to be delivered to destination router, with certain IP address. As such outer label can have multiple inner labels. The packet is sent on to the core of the network, which performs ordinary label switching, while forwarding the packet on towards destination router. When destination router receives the packet, it ignores the outer label, because it corresponds to destination router's own IP address. It then looks up the inner label, in a table (Figure 2-25). It then looks at the IP address on the packet, and finds where the packet is destined.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Moir's system/method to incorporate the detailed scheme of routing packets using inner labels and outer labels as taught by Cisco. The motivation is (as suggested by Cisco, page 1-2, first paragraph) that label switching using inner labels and outer labels allows routers to make forwarding decisions based on the contents of a simple label, rather than by performing a complex lookup based on a destination address like ip address.

Allowable Subject Matter

4. Claims 4, 6, 10-13, 17, 19 and 23-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Applicant's arguments, see pages 13-24 of the Remarks section, filed 8/1/2006, with respect to the rejection of claims 1, 3, 5, 7-9, 14, 16, 18 and 20-22 have been fully considered and they are not persuasive.

In regards to claims 1 and 14 Applicant summarizes Moir's teaching on page 13-18. Then on page 18 last paragraph and page 19 first paragraph, Applicant argues Moir fails to teach or suggest a "a virtual interface subsystem operative to couple the virtual router subsystem to the physical interfaces, the virtual interface subsystem including a plurality of virtual interfaces, the virtual interfaces being organized into link sets, each link set during operative to associate a generic interface identifier of a given virtual router with a corresponding physical interface coupled to a network link connecting the network device to another network device serving a same VPRN; the virtual interfaces included in the virtual interface subsystem include channel virtual interfaces and media virtual interfaces, each channel virtual interface being operative to associate a generic interface identifier of the virtual router subsystem with a virtual channel defined in the network device, and each media virtual interface being operative to associate a virtual

channel with a corresponding physical interface and physical channel defined on the associated physical network link".

However, examiner respectfully disagrees with this assertion. The present claim language is broad and in view of the broadest reasonable interpretation of this language, Moir does in fact disclose the above limitations. Specifically, in regards to claim 1, Moir teaches a virtual interface subsystem operative to couple the virtual router subsystem to the physical interfaces (page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface), the virtual interface subsystem including a plurality of virtual interfaces, the virtual interfaces being organized into linked sets, each linked set being operative to associate a generic interface identifier of a given virtual router with a corresponding physical interface coupled to a network link connecting the network device to another network device serving the same VPRN (page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface (e.g., Ethernet, VDSL, ADSL, etc.), assign a driver instance (i.e., the realization of the physical layer), assign the label space of the physical layer that the virtual interface can use, set the type of virtual interface (e.g., Ethernet, RFC1483, PPPoverL2TP, etc.), enable disable DHCP, assign a MAC address, assign an IP address and subnet mask (when routing), enable and disable IP multicasting, enable and disable broadcasting to other virtual interfaces of a particular type, enable and disable Network Address Translation, and enable and disable Spanning Tree and set state (e.g., blocking, listening, forwarding, etc.) priority and cost), the virtual interfaces included in the virtual interface subsystem include

channel virtual interfaces (page 4 section 0048, assign a driver instance (i.e., the realization of the physical layer), assign the label space of the physical layer that the virtual interface can use, set the type of virtual interface (e.g., Ethernet, RFC1483, PPPoverL2TP, etc.)) and media virtual interfaces (page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface (e.g., Ethernet, VDSL, ADSL, etc.)), each channel virtual interface being operative to associate a generic interface identifier of the virtual router subsystem with a virtual channel defined in the network device. and each media virtual interface being operative to associate a virtual channel-with a corresponding: physical interface and physical channel defined on the associated physical network link (page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface (e.g., Ethernet, VDSL, ADSL, etc.), assign a driver instance (i.e., the realization of the physical layer), assign the label space of the physical layer that the virtual interface can use, set the type of virtual interface (e.g., Ethernet, RFC1483, PPPoverL2TP, etc.), enable disable DHCP, assign a MAC address, assign an IP address and subnet mask (when routing), enable and disable IP multicasting, enable and disable broadcasting to other virtual interfaces of a particular type, enable and disable Network Address Translation, and enable and disable Spanning Tree and set state (e.g., blocking, listening, forwarding, etc.) priority and cost). In regards to claim 14, Moir teaches a plurality of virtual interfaces (page 4 section 0048, each virtual interface), the virtual interfaces being organized into linked sets each operative to associate a generic identifier used by a given virtual router with a corresponding physical interface to

another network device serving the same VPRN (page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface (e.g., Ethernet, VDSL, ADSL, etc.), assign a driver instance (i.e., the realization of the physical layer), assign the label space of the physical layer that the virtual interface can use, set the type of virtual interface (e.g., Ethernet, RFC1483, PPPoverL2TP, etc.), enable disable DHCP, assign a MAC address, assign an IP address and subnet mask (when routing), enable and disable IP multicasting, enable and disable broadcasting to other virtual interfaces of a particular type, enable and disable Network Address Translation, and enable and disable Spanning Tree and set state (e.g., blocking, listening, forwarding, etc.) priority and cost); for routing protocol messages (page 4 section 0048, Ethernet, RFC1483, PPPoverL2TP, etc) transmitted by a given virtual router at a given interface, obtaining physical interface information (page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface) from the linked set of virtual interfaces associated with the generic interface identifier (page 4 section 0048, flow class) of the interface, the physical interface information identifying a corresponding physical interface (page 4 section 0048, underlying physical interface (e.g., Ethernet, VDSL, ADSL, etc.)) of the network device via which the routing protocol messages (page 4 section 0048, Ethernet, RFC1483, PPPoverL2TP, etc) are to be transmitted, and transmitting the routing protocol messages (page 4 section 0045, Once a forwarding decision is made in a packet, an egress virtual interface 26 will map this value into it's own pier-to-pier protocol proprietary transmission) on the network link coupled to the identified physical interface

(page 4 section 0048, each virtual interface includes configuration to set the type of underlying physical interface (e.g., Ethernet, VDSL, ADSL, etc.), assign a driver instance (i.e., the realization of the physical layer), assign the label space of the physical layer that the virtual interface can use, set the type of virtual interface (e.g., Ethernet, RFC1483, PPPoverL2TP, etc.), enable disable DHCP, assign a MAC address, assign an IP address and subnet mask (when routing), enable and disable IP multicasting, enable and disable broadcasting to other virtual interfaces of a particular type, enable and disable Network Address Translation, and enable and disable Spanning Tree and set state (e.g., blocking, listening, forwarding, etc.) priority and cost).

In regards to claims 3 and 16 Applicant summarizes Chen's teaching on page 20-23. Then on page 19, 22 and 23, Applicant argues Chen in relevant part does not add anything to the teachings of Moir to arrive at Claims 3 and 16. Specifically, Applicant argues on page 19 last paragraph, that the Examiner is ignoring the context of the teachings in the different references, black letter law. Applicant argues the Examiner cannot pick and choose the teachings out of the context in which they are found to arrive at applicants' claimed invention. The specific teachings are only applicable to the context in which they are found. The reference Chen is completely distinct from and has nothing at all to do with Moir, and vice versa. Applicant argues that, what happens within a device has nothing to do with what happens outside the device.

However, Examiner respectfully disagrees with this assertion. APS is well known in the art (as suggested by Chen) to make a network reliable. In order to do APS, device has to internally change it's configuration and implement re-routing steps. External

events trigger internal changes. External event and internal change are not isolated form each other. As such Examiner respectfully disagrees with the Applicant about the hindsight argument (see page 23). The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art at the time the invention was made. See In re Keller 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Applicant further argues that Cisco (see page 23 last paragraph and page 24 first paragraph), in relevant part, does not add anything to the teachings of Moir to arrive at Claims 1 and 14, let alone Claims 2 and 15, from which Claims 5, 7-9,. 18 and 20-22, respectively, depend. However, examiner respectfully disagrees with this assertion. Applicant does refer to MPLS routing in the specification. Cisco prior art teaches methods of mapping various tunnel labels, which is relevant, the current application.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Salman Ahmed whose telephone number is (571)272-8307. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit 2616

SA
08/09/2006

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